

REMARKS

Claims 1-5 and 9-15 are pending.

Claims 5 and 9-15 are rejected.

Claim 5 is amended.

No new matter is added.

Claims 5 and 9-15 remain in the case for reconsideration.

Applicant requests reconsideration and allowance of the claims in light of the following remarks.

Claim Rejections – 35 U.S.C. § 102

Claims 5, 9 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,028,362 issued to Omura (“Omura”).

The rejections are respectfully traversed.

The present invention is directed to “*form a first sub-plug...in a lower portion of the contact hole,*” and “*forming a second sub-plug that fills an upper portion of the contact hole* on the first sub-plug, the second sub-plug having a substantially *flat* surface,” as recited in claim 5.

In contrast, Omura is directed to forming “*a flat* wiring layer forming method with a damascene method by depositing a conductive layer in *connection holes and interconnect grooves* formed in an insulating film and thereafter planarizing the conductive layer.” See the col. 1, lines 10-12 of Omura. In particular, in FIG. 19 of Omura, a connection hole 44S and an interconnection groove 44S are formed in an insulating film 44 to produce a dual damascene structure (Please see DUAL DAMASCENE: A ULSI WIRING TECHNOLOGY”, Carter, W. Kaanta et al. Jun. 11-12, 1991 VMIC Conference).

Subsequently, a *flat* wiring layer 56S is formed in the interconnection groove 44S and a *plug* 52S is formed in a connection hole 44S to complete a dual damascene structure, as is well known in the art. (Emphasis added) See col. 15, lines 21-25 and lines 62-65; col. 17, lines 50-53; col. 18, lines 4-7; and FIG. 23A of Omura.

Omura, therefore, does not teach, “*form a first sub-plug...in a lower portion of the contact hole,*” and “*forming a second sub-plug that fills an upper portion of the contact hole* on the first sub-plug, the second sub-plug having a substantially *flat* surface,” as recited in claim 5.

Rather, in Omura, in a contact hole or via hole 44s, no such second sub-plug having a substantially flat surface is formed on the first sub-plug because the *flat* wiring layer 56, not a plug, is formed in the interconnect grove 44S (overlying the plug 52s disposed in the contact hole 44s).

Along the line discussed above, to further clarify the present invention with respect to the point discussed above, claim 5 now recites, “the width of the first sub-plug is the same as that of the second sub-plug,” which is supported in FIG. 4. In this respect, the first and second sub-plugs of the present invention fill a contact hole having a cylindrical shape.

In contrast, Omura discloses a damascene wiring structure, in which the opening for forming the damascene wiring structure has a T-shaped cross-section. Therefore, the width of the plug 52s is different from that of the layer 56 disposed in the interconnect grooves 44S.

For the reasons stated above, Omura does not teach or disclose the above recited limitations and, therefore, does not teach or disclose all of the limitations of claim 5 of the present application. Consequently, Omura does not anticipate the invention recited in independent claim 5.

Thus, claim 5 and claims 9-12 and 14 depending on claim 5, are novel under 35 U.S.C. § 102(b).

Claim Rejections – 35 U.S.C. § 103

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Omura as applied to claim 5 above, and further in view of U.S. Patent No. 6,177,342 issued to Lee et al., (“Lee”).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Omura

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Omura as applied to claim 5 above and further in view of U.S. Patent No. 6,203,613 Gates et al., (“Gates”).

The rejections are respectfully traversed.

As discussed above, Omura does not teach all of the limitations of claim 5.

Therefore, the rejection has not presented a *prima facie* case of obviousness. Therefore, claims 10, 11, and 15, which depend from claim 5, are allowable.

For the foregoing reasons, reconsideration and allowance of claims 5 and 9-15 of the application as amended is solicited. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Customer No. 20575

Respectfully submitted,

MARGER JOHNSON & McCOLLOM, P.C.


A handwritten signature in black ink, appearing to read "Scott A. Schaffer". It is written in a cursive style with some loops and variations in thickness.

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